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Multifractal analysis of self-similar measures with overlap

It is well known that the multifractal spectrum of a self-similar measure satisfying the open set condition is a closed interval. In contrast, Hu and Lau discovered the surprising fact that the 3-fold convolution power of the classical Cantor measure has an isolated point in its multifractal spectrum. More generally, this is true for any suitably large, convolution power of a continuous probability measure supported on $[0, 1]$, which has the property that the local dimension at 0 is positive and the N-fold sum of the support of the measure is $[0, N]$ for some N. Self-similar measures generated by $m \geq d$ contractions, with fixed contraction factor $1/d$, $d \in N$, and probabilities $p_i > 0$ with p_0 minimal, also have an isolated point in their spectrum. If, however, some $p_i = 0$, the structure of the spectrum is more complicated and can even consist of two disjoint, non-trivial intervals.